# SINGLE ANTENNA SPACE-TIME FAST MODEM SYSTEM


## ABSTRACT

**[0087]** A single cable or single antenna space-time fast modem system is described. Very high data transfer rates are accomplished using a space-time MIMO transceiver in combination with a unique space-time antenna reduction chamber and a frequency spectrum shifting module. The system readily connects to any existing communications infrastructure. The high speed data modem system incorporates a MIMO space-time wireless transceiver, yet unlike existing space-time wireless systems, requires only a single cable or antenna to achieve very high data transfer rates. Furthermore, this fast modem system achieves these very rapid data transfer rates, those comparable to a MIMO space-time wireless data link over existing wired or wireless infrastructure while operating at any carrier frequency, including base band, maintains data transfer rates during high speed motion, maintains a predictable separation factor "k" regardless of topographical limitations, is small in size, with no need for numerous cables or antennas, and can be produced at low cost. It is also possible, that the fast modem system described herein can be used with, or connected to any pre-existing communications means (e.g., LAN, WAN, Internet, dedicated lines, etc.) to provide very high speed data transfer rates.